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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 473,415	12 29 1999	KAZUO KISHINO	HALL 1-3 0-270	9957

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EXAMINER
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THEXTON, MATTHEW

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 03 04 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/473,415

Applicant(s)

KISHINO ET AL.

Examiner

Matthew A. Thexton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 1, 2, and 4-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3 and 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/703,709.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of claim 3, plus added claims 8-15, in Paper No. 4 is acknowledged. The traversal is on the ground(s) that 1) there is no need for further search and 2) the subject matter of the two groups is unseparable as evidenced by recitals 1-9 at pages 3-5 of the specification. This is not found persuasive because the method of claim 3 for storing involves the control of the oxygen level to less than half that of ambient (i.e., between 0.01 and 10 volume %; versus 21% for air) which necessitates the indicated additional search as well as consideration of separate issues from the methods of claims 1,2, and 4-7 which do not require ongoing regulation of an environmental state for storage maintenance. The recitals at pages 3-5 characterize many embodiments, some in claim limitations and some not, but it is not seen how any one or combination of them establishes that group 1 would render group 2 unpatentable were it a valid prior art reference, or vice versa.
2. The requirement is still deemed proper and is therefore made FINAL.
3. Claims 1,2, and 4-7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 4.
4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Priority***

5. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

6. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copies have been filed, received on 27 January 1997, in parent Application No. 08/703709, filed on 27 August 1996.

***Information Disclosure Statement***

7. The information disclosure statement (IDS) submitted on 10 February 2003 was received prior to the Examiner's first action on the merits. Accordingly, the information disclosure statement is being considered by the examiner.

***Specification***

8. Applicant is reminded of the proper language and format for an abstract of the disclosure.

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The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the abstract is not one paragraph of the proper length. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

9. Claim 3 is objected to because of the following informalities: The concluding phrase, "as held in contact with metal," is grammatically awkward. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 8, and 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: adjusting the water content to not more than 0.3 weight percent. The statements at pages 12 and 17-18 as to Method A requires the adjustment of water to not more 0.3 weight percent when the oxygen content is adjusted to 0.01 to 10 volume percent. Examples 13 and

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20 support the requirement to set both parameters as indicated. In addition, Control 2, 3, and 5 support the requirement to set both parameters as indicated.

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The phrase at the conclusion of the claim "relative to that of the acrylonitrile" is not the same as the enablement for the concentration of maleimide in the solvent acrylonitrile, e.g., at page 12, lines 4-5. As written, the claim requires that the maleimide be formulated relative to the acrylonitrile rather than relative to the resulting mixture as enabled by the disclosure.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 3, and 13-15 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Kishino, et al., (JP 08-092208). See especially paragraphs [0017] to [0024].

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishino, et al. (JP 08-092208) as applied to claims 3, and 13-15 above, and further in view of Kita, et al. (EP 323244).

Claim 8 requires the use of two additives each at 0.0001 to 1.0 weight percent relative to the maleimide. The Kita (page 5, lines 7-15) and Kishino (paragraphs [0017] and [0018]) references each disclose hindered phenols and triphenyl phosphites as polymerization inhibitors in solutions of maleimide in acrylonitrile; Kishino teaches 0.0001 to 1.0 weight percent based on the maleimide, while Kita teaches 0.0001 to 1.0 weight percent based on the whole solution, either of which substantially overlaps the limitations of claim 8. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ combinations of suggested polymerization inhibitors when species are suggested since they are taught to have the same effect and the ordinary artisan has e.g., economic, handling, downstream or considerations requiring routine optimization. Claims 10 and 11 specify the mixing order and physical state of the components going into the solutions. Kita discloses these variations at page 5, lines 19-20 and 27-33. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate these suggestions of Kita in the teachings of Kishino because the references are directed to the same art.

14. Claims 3, 8, 10, 11, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita, et al. (EP 323244) in view of Kita, et al. (US 5149827).

Kita '244 teaches preparing solutions of maleimide in acrylonitrile further formulated with polymerization inhibitors (0.0001 to 1.0 weight percent relative to the solution, page 5, lines 7-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ combinations of suggested polymerization inhibitors when species are suggested thus arriving at the limitations of claim 8, since they are taught to have the same effect and the ordinary artisan has e.g., economic, handling, downstream or considerations requiring routine optimization. Claims 10 and 11 specify the mixing order and physical state of the components of the solutions. Kita '244 discloses these variations at page 5, lines 19-20 and 27-33. Claim 13 requires maleimide be 40-90 weight percent relative to that of the acrylonitrile. Kita '244 teaches maleimide concentration of 30-90 weight percent, page 5, lines 26-27, which is taken to mean relative to the solution, which requirement overlaps that of the claim and thus satisfies that limitation. Claims 14 and 15 require that the gas phase contain oxygen and an inert gas, particularly nitrogen in claim 15. Kita '244 discloses using inert gas such as nitrogen, carbon dioxide, or argon to replace air for reasons of precluding explosion (page 3, lines 15-23 and 53-58, page 7, lines 7-11, 29-47). Kita '244 does not disclose the limitation of claims 3, 14, and 15 that oxygen in the gas phase be adjusted to the range of 0.01 to 10 volume percent.

Kita '827 discloses that control of the oxygen in the gas phase to the range of 0.01 to 10 volume percent is beneficial to control maleimide polymerization (paragraph



bridging columns 6 and 7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching of Kita '827 in combination with the teachings of Kita '244 because both references seek to reduce the occurrence of polymerization of maleimide, and combining the two techniques would be expected to be effective.

15. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita, et al. (EP 323244) in view of Kita, et al. (US 5149827) as applied to claims 3, 8, 10, 11, and 13-15 above, and further in view of Ueda, et al. (JP 06-128223).

Ueda discloses that coloration of maleimide may be mitigated by reducing the water content to 0.5 weight percent or less (see especially the last five lines of page 2 of the translation, through the first three lines of page 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching of Ueda in combination with the other references in order to obtain the benefit of reducing the coloration of stored or transported maleimide, thus arriving at the limitation of claim 9. The limitation of claim 12 would be inherent from following the teachings to arrive at claim 9.

#### ***Pertinent Prior Art***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kita, et al. (US 5045233) discloses solutions of maleimide in acrylonitrile with polymerization inhibitors at dosages and proportions within the limitations of the present claims, in which such solutions are prepared by replacing the gas phase with nitrogen

(examples 34-37). There is no suggestion that a minimum amount of 0.01 volume percent of oxygen be used. This reference is substantially cumulative to Kita, et al. (EP 323244).

Derwent ACC-NO 1993-021435 (JP 04-346973) discloses maleimide dissolved in acrylonitrile in an inert atmosphere with stabilizers. A translation of the full document has been ordered for the file.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Thexton whose telephone number is 703-305-5085. The examiner can normally be reached on Monday-Friday, 8:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan S Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5665.

February 28, 2003



Matthew A. Thexton  
Primary Examiner Art Unit 1714